LOS ANGELES STATE AND COUNTY ARBORETUM

BIENNIAL REPORT

1971 - 1973

COUNTY OF LOS ANGELES

DEPARTMENT OF ARBORETA AND BOTANIC GARDENS

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1971 - 1973

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1971 - 1973

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THE LOS ANGELES STATE AND COUNTY ARBORETUM

Anniversary

1973

The 25th anniversary of the founding of the Arboretum was celebrated February 20, 1973, at a banquet held in the Mediterranean Room of the Brookside Clubhouse in Pasadena. Many of the original founders were present, among them Dr. Samuel Ayres., Jr., who first had the idea to create an arboretum for the people of Los Angeles County and who over the years has helped it in many ways; Howard Miller, who made the presentation a quarter of a century ago that transferred the Arboretum from its original parent, the California Arboretum Foundation, to an agency of the State and County; and former county supervisor, John Anson Ford, who persuaded his colleagues on the Board of Supervisors and, subsequently, State officials, to create the institution known today as the Los Angeles State and County Arboretum. Mr. Ford, whose twenty-four years as a member of the Board of Supervisors has never been exceeded, also played a key role in the development of Descanso Gardens as well as such other public institutions as the Hollywood Bowl and the County Museum.

Other longtime friends and supporters of the Arboretum in attendance were Dr. Frits Went, founding president of the Foundation; Mrs. John R. Mage, Mr. F. Harold Roach, Mrs. Ralph Cornell, Mrs. Forrest Stanton, Dr. Arie J. Haagen-Smit, and the late George Spalding. Mr. Kay Iizuka, president of the Board of Governors, presented on behalf of that body, a future Founders' Garden plaque. This small garden will be built alongside the path leading to the Sunset Demonstration Gardens and will consist of a circulating shallow stream starting from a spring-like fountain with various ground covers, grasses and mosses growing on either side and among the decorative rocks.

State Senator H. L. Richardson presented to Mrs. Peter L. Douglas, Foundation president, a scroll from the Board of Supervisors on behalf of Supervisor Peter Schabarum who was unable to attend, Mrs. Douglas accepting. The ceremonies for the evening ended with a few closing remarks by Department Director, Francis Ching.

AABGA Meeting

1973

Botanists, horticulturists, administrators, and landscape architects representing leading botanic gardens in the United State and Canada arrived in Arcadia on April 15, 1973, to prepare for a four day convention that conducted its principal business at the Arboretum. The participants were all members of the American Association of Botanical Gardens and Arboreta which meets each year at a different member garden to discuss matters of mutual interest. The meeting at the Arboretum centered on education and public services and the kinds of programs botanic institutions offer in these categories.

Department Director, Francis Ching, organized a busy schedule for the 100 registered delegates. Parts of each day were given over to taking confrees on a variety of field trips that included visits to other botanic gardens in the area, a tour of rural areas where California wildflowers were in bloom, an early-morning exploration of the Los Angeles Flower Market, and a trip to the Monrovia Nursery, which comprises 350 acres of plants in containers, the largest nursery of it kind in the world. The directors and officers of each place visited conducted tours and also were the presiding hosts at informal luncheon meetings.

On Monday, the 16th, the first of three successive afternoon symposiums was held in the Arboretum Lecture Hall. With Dr. Mildred Mathias, director of the Botanical Garden-Herbarium of the University of California at

Los Angeles, serving as chairman, nine panelists addressed themselves to "The Wonderful World of Plants in Southern California." They were: Mildred Davis, landscape designer; Fred Boutin, botanist, Huntington Botanical Gardens; Dave Verity, Native Plant Specialist, University of California at Los Angeles; Paul Hutchison, rare plant collector, Tropic World; George Spalding, botanical information consultant, Los Angeles State and County Arboretum; Philip Chandler, landscape designer; Elmer Lorenz, rare plant collector; Donald P. Woolley, a plantsman; and Fred Lang, landscape architect, A.I.L.A.

The next day, Joseph Oppe, director of the Arthur Hoyt Scott Horticultural Foundation at Swarthmore College, chaired a discussion on "Future Directions for the American Association of Botanical Gardens and Arboreta." Panelists were: Angus Heeps, assistant director, Henry Foundation for Botanical Research; Glenn Park, horticulturist, Chicago Botanic Gardens; Dr. Richard W. Lightly, coordinator, Longwood Program, University of Delaware; and Carl Totemeir, director, Bayard-Cutting Arboretum.

Dr. Lee Lenz, director of the Rancho Santa Ana Botanic Garden, was chairman of the final symposium, which was concerned with "Educational Programs at Arboreta and Botanic Gardens." Dr. Jacqueline Broughton, education director, Santa Barbara Botanic Garden, spoke on "The Role of the Botanic Garden in Youth Education"; Dr. Roy L. Taylor, director, Botanic Garden of the University of British Columbia, spoke on "The Role of the Botanic Garden in Graduate Education"; Dr. Elizabeth Scholtz, director, Brooklyn Botanic Garden, spoke on "The Role of the Botanic Garden in Adult Education"; and Dr. Richard W. Lightly on "The Role of the Botanic Garden in Horticultural Education."

Dr. Arie J. Haagen-Smit, California's renowned expert on air pollution, was the principal speaker at the annual AABGA banquet, held the evening of April 17. Dr. Haagen-Smit spoke on "Smog, Plants, and People." The evening ended with the presentation of AABGA awards of merit and words of thanks to Mr. Ching for his organizational efforts from Dr. Richard A. Howard, director of the Arnold Arboretum of Harvard University and the new president of the AABGA.

Plant Introductions

The Plant Introduction Program continues as one of the Department's primary functions. Through June of 1973, the Department has introduced 62 plant species and has developed contracts with Southern California nurseries for introduction of an additional 15. In addition, the Propagation Section is investigating or actively propagating 32 species and selections of plants that show horticultural promise and are considered potential introductions.

Plants introduced to the nursery trade 1971-73 included:

December, 1971	Camellia 'John Anson Ford'
December, 1971	Gazania 'Sun-Gold'
December, 1971	Gazania 'Sun-Burst'
August, 1971	Grevellia 'Red Glow'
March, 1972	Grevellia 'Pink Pearl'
March, 1972	Grevellia 'Pink Pygmy'
June, 1972	*Viburnum rigidum*
August, 1972	*Nerium oleander* 'Petite Pink'
August, 1972	*Nerium oleander* 'Petite Salmon'

New Developments

In September, 1972, the Meadowbrook project was started. It required changing the flat area occupied by an annual-perennial display into hills and dales. Close to 8,000 cubic yards of earth were shifted in the process. A 1,000-foot winding brook was constructed through this new meadow, never more than 8 feet wide nor more than 18 inches deep in an area in which the grade dropped a minimum of 6 feet. A path follows along the stream, crossing it at several points by means of redwood bridges. The project was funded by the California Arboretum Foundation, Inc. with matching funds from the County of Los Angeles and with much of the construction accomplished by the staff under the supervision of the superintendent and the director.

In the Sunset Demonstration Home Gardens, new features include a site at the north end of the garden developed as a demonstration vegetable garden. To assist those persons living in garden apartments and similar dwellings where the available planting area is limited, another small garden area featuring low-maintenance plants was developed, using rail-road ties for a patio deck, and a driftwood fence.

The approach to the Aboretum has been changed considerably with the widening of Baldwin Avenue, the planting of a median strip and the planting of the areas adjoining the on-and-off-ramps of the Foothill Freeway. The entire complex features plants developed by the Arboretum and offers a splendid example of landscaping for beauty instead of viewing traditional stereotype plants. It also was an outstanding demonstration of cooperation between federal, state, county and city agencies. One hundred trees and over 60,000 ground covers have been planted in sufficient variety to provide color most of the year. To facilitate maintenance, automatic sprinkler systems were installed

through the cooperative efforts of the Arboretum and the City of Arcadia.

1973
A new garden area just north of the rotunda has been developed with the Arboretum's finest specimen of Tabebuia chrysotricha (Golden Trumpet Tree) as a focal point. This garden will eventually become the Founders' Garden, a gift from the Board of Governors to the CAF in recognition of the 25th anniversary of the beginning of LASCA. Other developements included the following: a portable 864-foot saran shade area for weekend public lectures and three garden kiosks on which are posted horticultural information and coming events; repairing and resurfacing of roadways; painting County and State historical buildings; refurbishing the youth education building; providing electrical service throughout the historical mall for night lighting; installing new pumps and jets in the Bauer Pool and Fountain.

The Arboretum is engaged in a cooperative program with the Los Angeles County Sanitation District to determine the limitations in the use of effluent (waste) water for irrigating ornamental plants. The program involves determining the toxicity (by plant research personnel) of the various chemicals, heavy metals, and salts normally found in such waters and the screening of plants for their resistance to these materials. The 17-acre site has been fenced and water lines are currently being installed to transmit water for the outfall of the sanitation plant to the test site.

Attendance

Figures for this reporting period, 1971-73, show an increase of 8.1 percent. In comparison, attendance figures at the Arboretum for the past three biennial periods showed an increase of 3.5 percent. This change in the rate of increase, occurring as it has during a period in which County population has remained almost static, can be attributed to the public's response to an expansion of services, new garden programs, and other developments to be described in the following paragraphs.

1971-72	1972-73
590,028	626,994

Weather

Daily readings of temperature, rainfall and humidity, plus general weather observations, are recorded and forwarded monthly to the Los Angeles County Flood Control District from the Arboretum Weather Station N. 1037-E. Additional data is gathered for the U.S. Weather Bureau Fruit Warning Service during the frost season which begins November 15 and continues until February 20. These readings are broadcast by radio all over the western United States.

	1971-72	1972-73
Lowest Temperature	25° - Dec. 14, 1971 Jan. 5, 1972 Dec. 12, 1972	24° - Jan. 5, 1973
Highest Temperature	106° - July 28, 1972	111° - June 20, 1973
Total Days of Rainfall	24	37
Heaviest Monthly Rainfall	6.5 inches-Dec., 1971	11.87 inches-Feb., 1973
Yearly Rainfall	8.1 inches	26.2 inches

Job Training

During the past two year period, the Arboretum has provided on-the-job training for 24 persons referred by the State Department of Rehabilitation, 31 Work-Incentive recipients, 3 Public Employment Program employees, 1 United Way worker, and 3 volunteer trainees.

The Arboretum had the benefit of over 40,000 hours of maintenance work provided by persons assigned by the Los Angeles County Department of Public Social Services.

Meetings at the Arboretum

During 1971-73, the Arboretum served as a meeting place for the societies, garden clubs, and civic organizations listed below:

Akebono Bonsai Society

[illegible] Hilltoppers Garden Club

American Association of Botanical Gardens and Arboreta

Arcadia Garden Club

Arcadia/Sierra Madre Newcomers

[illegible] Society

Lakewood Kenkyukai Bonsai

Burbank Women's Club

Cactus & Succulent Society of America

California Associates

California Association of Nurserymen

California Garden Club

Chamber of Commerce

Country Cousins

Cymbidium Society

Diggers Garden Club

Entomological Club of Southern California

Epiphyllum Society

Floralia Guild

Gladiolus Society

Greater Los Angeles Rose Council

Herb Society

Judges Council of Southern California

Las Jardineras Garden Club

Long Beach Amateur Orchid Society

Los Angeles County Employees Association

Angeles County Schools

Men's Garden Club

Moopark College

National Herb Society

Pacific Rose Society

Pasadena Arts Council

Pasadena Horticultural Society

Pasadena Star News

San Gabriel Valley Branch Cactus & Succulent Society

San Gabriel Valley Orchid Hobbyists

Santa Anita Bonsai

Southern California Camellia Council

Southern California Daffodil Society

Southern California Gladiolus Society

Southern California Hemerocallis & Amaryllis Society

Southern California Iris Society

Southland Orchid Show, Inc.

Theodore Payne Foundation

United Way

Women's Club of Bellflower

Flower Shows and Special Events Held at the Arboretum - 1971-73

Bril Show

Iri Show

Baldwin Bonanza

Begonia Show

Bonsai Show

Cactus & Succulent Society Show

Camellia Show

Early Camellia Show

Epiphyllum Show

Fall Mum Show

Foundation Annual Luncheon

Gladiolus Show

Hemerocallis & Amaryllis Show

Herb Show

Hugo Reid Roundup

Iris Show

Rose Show

San Gabriel Valley Begonia Show

San Gabriel Valley Fall Flower and Garden Show

Spring Flower Show

Theodore Payne Lectures (6)

25th Anniversary Dinner

Publications

1973

In keeping with Department response to the needs of the community, the Public Services Division greatly expanded its publications program in this period, introducing some new brochures and revising and reprinting older publications. New publications are a Guide to Pond Ecology, Home Vegetable Gardening, and Poisonous Plants of Southern California. Over 25,000 of these brochures have been distributed to the public, to hospitals and other public agencies. Requests from the public prompted the start of a series of leaflets on various horticultural subjects. Those produced so far are: Living Trees for Christmas, Growing Azaleas in the Home Garden, and Guideline for Growth and Care of Scotch and Irish Moss.

Publications produced on a regular basis are:

Department newsletter - monthly

Calendars - monthly

Schedules: Adult Education - fall and spring

Minicourses - yearly

Sunday Lecture/Walks series - yearly

Theodore Payne Foundation Lectures - yearly

A major publication of the Department is its quarterly magazine, CASCA Leaves, distributed by the publisher, the California Arboretum Foundation, to its members and to educational institutions and botanic gardens all over the world.

Media Service

The Public Services Division serves the communications media with news releases, features, photographs and radio spot announcements and arranges and assists television location broadcasts.

Printing

Offset printing services are provided for all divisions in the Department and for associated supporting foundations. Examples are: forms, seed lists, announcements, material for Arbor Day teacher manuals, horticultural instructions. Total printing by the division in this biennial period is 800,000 sheets of paper.

Guided Tours

During this biennial period the greatest change in guided tours took place at South Coast Botanic Garden as a natural consequence of the garden's being opened to the public seven days a week. The first guided tour (by tram) was conducted in November of 1970. In April, 1973, as demand for tours rose, tram tickets were introduced, similar to those used at the Arboretum. As expected, the public responded very favorably to the convenience of having a ticket that would assure a seat at a specified time, thereby precluding the need to wait around in the tram loading area. Also, as at the Arboretum, the free tickets markedly stimulated public donations. At the Arboretum, the tram tour was lengthened to include a regular stop and walking tour of the new aquatic garden. At Descanso Gardens, tram tour service remained at the same level as in the previous biennial period but with greater public convenience provided by the introduction of tickets as at the other gardens.

School Field Trips

The Department's three facilities are popular study areas for the 1.37 million students in the 95 school districts in the County of Los Angeles. Field trips for grades 3 through 12 are offered at each facility and are conducted mainly by volunteers. At the Arboretum, 50 volunteer field leaders were given intensive classroom and field training in two basic subject areas: Plants and Man and Early California History. The curricula is developed in accord with approved State of California textbooks in the social and natural sciences with emphasis given to developing an understanding of man's roles in relation to his environment, utilizing the student's own school and home environment as a frame of reference.

Attendance and number of trips at each garden in this biennial period are as follows:

Arboretum	
Total Trips	1,550
Total Attendance	26,000
Descanso Gardens	
Total Trips	950
Total Attendance	14,000
South Coast Botanic Garden	
Total Trips	300
Total Attendance	6,700

Special Events, Services, Public Relations

The Department supplies the audio-visual, graphic arts, printed matter, special tour and other requirements associated with the flower shows, lectures, concerts, meetings, and special events held at each facility. It is broadly responsible for the safety, conduct, and requests of the 1.2 million people who visit the three gardens annually. Included in this category are the handling of complaints, documenting accidents, assisting the ill or injured, helping to curtail vandalism, issuing car passes and wheelchairs, issuing mosquito fish (gambusia) from an aquarium filled and maintained by tour guides, issuing brochures and other printed information, providing special tours for senior citizens and other minority groups, setting up audio-visual equipment, maintaining and constructing public signs and looking after the wildlife in each garden, all of which are classified as wildlife sanctuaries.

EDUCATION

Through its Education Division, the Department continually updates educational programs that are relevant to the public needs in the field of horticulture, botany, gardening, California History and the various areas of nature study and conservation.

Each program utilizes the expertise of staff specialists and the horticultural and botanical resources of the three gardens.

Current programs are:

Youth Education and School Programs

Adult Education Classes

Mini-Courses

Horticultural Information Service

Plant Science Library

Arboretum Historical Museums

Work Experience, Teachers and Volunteers Training

Arbor Day Program

Youth Education and School Programs

The Youth Education Program provides a gardening and nature-related curriculum throughout the year at each of the three gardens. Workshops are provided for children 6 to 14 years of age and are scheduled after school, Saturdays, and during summer vacations.

	1971-72	1972-73	Total
Youth Classes - Three Facilities	68	70	138
Attendance	5,946	5,987	11,933

Adult Education Classes

Day and evening classes for adults are cosponsored by the Department, Pasadena City College, Los Angeles Harbor College, U.C.L.A. and affiliated foundations. They are designed to serve the horticultural interests of the home gardener and those interested in environmental and nature-art subjects. The following classes were offered in this period:

Agricultural Chemicals

Birds and Our Environment

Bonsai, Advanced

Bonsai, Beginning

Bonsai, Intermediate

California Heritage

Container Gardening

Contemporary Flower Arrangements

Down to Earth Art

Environmental Flower Arrangement, Advanced

Flower Arrangements

Flower Arrangements, Advanced

Garden Insects and Diseases

Herbs

Home Gardening

Home Gardening, Advanced

Home Gardening, Basics

Home Horticulture

Home Landscape Design

Japanese Flower Arrangements

Orchid Culture

Plant Identification

Plant Propagation

Poisonous, Medicinal and Edible Plants

Shade Gardening

Sketching and Painting

Taxonomy of Flowering Plants

Treasures in Nature

Vegetable Gardening

Total Adult Classes for the biennium were:

	1971-72	1972-73	Total
Adult Classes - Three Facilities	35	40	75
Attendance	16,310	23,122	39,432

Mini-Courses

The adult education classes offered by this Department have largely been scheduled according to traditional semester periods, the classes meeting, for the most part, during evening hours in accord with standard adult education practices. Attendance at these evening classes has demonstrated that this scheduling should continue. At the same time, it has become clear that there is a sizeable segment of the public that has (1) free hours during the day; and (2) would like to cover a subject in less than the semester period. As a consequence, the California Arboretum Foundation, with the assistance of the Arboretum staff, introduced in the fall of 1972, a series of

mini-courses that would meet for from three to five sessions, three hours per session. A dozen subjects were offered, many at beginning and advanced levels. Public response has substantiated the efforts made to design and prepare these short, intensive courses which are expected to become part of the curricula offered by the Education Division.

Subjects offered were:

Aboriculture I &II
Botany I & II
California History
Container Gardening
Edible, Poisonous and Medicinal Weeds
Genetics and Plant Breeding
Hanging Baskets
Holiday Decorations
Plant Diseases
Plant Physiology
Soils, Hydroponics and Fertilizers
Terrariums

Horticultural Information Service

During 1971-73, the Horticultural Consultant, George Spalding, answered nearly 8,000 public inquiries.

	1971-72	1972-73	Total
Telephone Inquiries	3,378	3,608	6,986
In Person	484	470	954
TOTAL	3,862	4,078	7,940

Mr. Spalding also wrote 93 "Plant of the Week" features for the Pasadena Star News, a column informing citizens of the habits and culture of a specimen plant currently in bloom at the Arboretum and suitable for the homeowners. He prepared an annotated list of

Australian plants used in California landscapes and was a consultant for eight publications of the Time-Life Garden Series. Mr. Spalding's final major contribution to the Department was his authorship of "A History of the Arboretum: The First Twenty-Five Years," written to commemorate the Arboretum's 25th anniversary.

We are saddened to report that Mr. Spalding died on January 12, 1974, at the age of 59. He had been with the Arboretum since its inception in 1948. His extensive knowledge of its history, his expertise in the field, and his helpful nature will truly be missed by the staff and his many friends.

Plant Science Reference Library

At the end of this biennium, the library contained 18,305 catalogued books and pamphlets and subscribed to 528 periodicals. Volunteers gave 1,585 hours of assistance in cataloguing old collections, eliminating numerous duplicate books, renovating leather binding, typing index cards, and performing reference work under the direction of the Plant Science Librarian. The library is open weekdays to the public on a reference basis only.

Arboretum Historical Museums

A total of 15,285 visitors in 1971-72 and 18,784 in 1972-73 visited the Department's newest historical building, the Santa Anita Depot. Over 90 donors donated 615 artifacts, among them an original E. J. Baldwin gold watch.

Queen Anne Frolic

On September 24, 1971, the California Arboretum Foundation and its volunteer organization, Las Voluntarias, plus members of the Arboretum staff, the Foundation Board of Trustees, the Board of Governors and the president of the Descanso Gardens Guild, combined to present the "Queen Anne Frolic," on the mall in front of the Queen Anne Cottage. An evening, first-of-its-kind fund-raising party, the event was successful beyond all expectations and netted close to $5,000, most of which was earmarked for seeds and plants at the Arboretum for the following year. Highlights of the entertainment were rides in horseless carriages, dancing and special tours of the historical buildings.

Work Experience, Teacher and Training Programs

Consultation was provided for the Instructional Services Division of Los Angeles County Schools in developing a model for In-Service Teacher Training in environmental studies.

The Department also sponsors an "Enrichment Program for Gifted Elementary Students" in which a staff specialist develops a program with a local school teacher providing 15 students with six weeks of work experience on the Arboretum grounds as part of their school curriculum.

A second Work Experience Program provides for training of a number of high school students who work for experience two hours per day, five days per week for one school semester. The students work in the Herbarium, Research, Horticulture or Youth Education sections and are required to write a paper at the end of their service.

In cooperation with the Personnel Administration and the Manpower Development Training Act (MDTA), the Department provides classroom and field training at its three facilities for unemployed persons interested in horticultural pursuits.

Arbor Day Program

Past Arbor Day celebrations that have taken place on the grounds of each of the Department's gardens have been replaced by school-centered programs available to all elementary schools in Los Angeles County. The aim of the new program is to reach a greater number of young people than heretofore possible and to involve them more deeply in the basic meanings of Arbor Day: conservation and beautification of the environment. The essence of the program is a handsome, teacher resource kit consisting of directions for tree planting, a 10-inch x 12-inch folder containing a sample school program, and a list of organizations supplying information on ecology and related subjects. In 1973, 60 County school districts took part in the program, 482 schools presenting programs to their students, faculty, parents, and friends. Each participating school received a 6-foot tree grown by the Arboretum, along with the packet of resource material.

SCHOOLS PARTICIPATING IN ARBOR DAY PROGRAM

School District	Number Schools Participating	School District	Number Schools Participating
ABC	18	Long Beach	9
Alhambra	4	Los Angeles	114
Arcadia	10	Los Nietos	3
Azusa	2	Lowell	4
Baldwin Park	3	Lynwood	2
Bassett	3	Manhattan Beach	9
Bellflower	3	Monrovia	3
Beverly Hills	2	Montebello	17
Bonita	2	Norwalk	1
Burbank	3	La Mirada	7
Charter Oak	3	Montclair	2
Claremont	5	Ontario	1
Compton	29	Palos Verdes Peninsula	17
Covina Valley	12	Pasadena	26
Downey	6	Pomona	8
Duarte	6	Redondo Beach	4
East Whittier	3	Rosemead	5
El Monte	3	Rowland	5
El Rancho	4	San Gabriel	4
El Segundo	1	San Marino	1
Garvey	2	Santa Monica	7
Glendale	14	South Pasadena	3
Glendora	9	South Whittier	6
Hacienda-La Puente	5	Temple City	6
Hawthorne	1	Torrance	25
Hermosa Beach	4	Valle Lindo	3
Inglewood	4	Walnut Valley	2
La Canada	4	West Covina	3
Lawndale	9	Whittier	3
Little Lake	5	Wiseburn	3

TOTAL DISTRICTS PARTICIPATING: 60

TOTAL SCHOOLS PARTICIPATING: 482

DESCANSO GARDENS

The major garden improvement was the completion of a $41,000 water distribution system that now surrounds the outer perimeter of the gardens and replaces old and broken lines that had previously caused water loss and insufficient water pressure. Over a million gallons of high quality spring water is piped from Hall Beckley Canyon in the foothills, thereby reducing the need for more costly and lower quality water purchased from the local water company. All pipes in Hall Beckley Canyon have also been replaced, increasing substantially the amount and availability of water for the dry summer season at the garden.

A major clearing of the 20-foot-wide firebreak that runs alongside the fence through the chaparral area was completed during the last half of this biennium. The fence serves to keep deer and other wildlife from entering the main body of the garden; the firebreak provides a safety barrier against the spread of the dangerous fires common to chaparral vegetation and which, if left unchecked, will encroach across bare ground. Together with the garden's Chaparral Trail, the firebreak provides thousands of students with the opportunity to study the botanic and environmental aspects of a natural plant community.

Two patios were completed within the oak forest to form the nucleus of a permanent, all-year exhibit area aimed at providing the public with ideas on landscaping and patio design. Eventually, as many as eleven patios will be constructed, sited so as not to intrude upon established garden landscaping and plantings, and making possible flexible facilities for staging a variety of flower shows

and gardening demonstrations.

Descanso Gardens is world famous for its forest of native oaks and the thousands of camellia plants growing underneath them. This juxtapostion is horticulturally favorable for most camellias but not for the oaks, which tend to develop root rot fungus as a result of warm weather and moist soil required by the camellias. The nature of oak root rot fungus was not known at the time the camellias were planted, nearly a half a century ago, but has been the subject of a continuing research project by this Department. It was found that one means of helping to preserve the oaks is to remove the soil around the base of each tree so as to expose the large roots. Construction of these basins, which have about a 6-foot radius, and cleaning them out periodically was accomplished.

Attendance

1971-72	1972-73
461,547	428,648

Weather

Descanso Gardens weather charts are made available to the Los Angeles County Flood Control District Hydraulic Division.

Data for the weather season, October 1 to September 30:

	1971-72	1972-73
Lowest Temperature	28° - Jan. 5, 1972	23° - Dec. 9, 1972
Highest Temperature	109° - July 28, 1972	110° - June 21, 1973
Total Days of Rainfall	22	39
Heaviest Monthly Rainfall	Dec., 1971-8 inches	Feb., 1973-11.66 inches
Yearly Rainfall	10.33 inches	28.51 inches

Societies, garden clubs, and civic organizations meeting at Descanso Gardens, 1971-1973:

Altadena Women's Club

Art League of Eagle Rock

California Associon of Nurserymen

Campfire Girls, Glendale

Catalina Art Association

Civil Service Commission of Los Angeles County

Daffodil Society of Los Angeles

Diggers Garden Club

Employees Association (LACEA)

Eugene Field School P.T.A.

Fremont School P.T.A.

Glendale Art Association

Glendale Chrysanthemum Society

Glendale College Symphony

Glendale Foothill Art Guild

Glendale League of Women Voters

Glendale Newcomers

Highland Park Art Guild

Jet Propulsion Laboratory

La Canada Bonsai ociety

La Canada Elementary School P.T.A.

La Canada Players

La Canada Valley Beautiful

La Canada Women's Club

Las Artistas Art Club

Las Feliz Women's Club

Los Angeles Camellia Council

Mid-Valley Art League

Mountain Avenue School P.T.A.

P.E.O. Chapter C.M.

Pacific Rose Society

Palm Crest School P.T.A.

Pasadena Garden Club

San Fernando Audubon Society

Southern California Camellia Council

Southern California Edison Company

Theodore Payne Foundation

Unity Court #92 - Amaranth

University of Chicago Fund Workers

Verdugo Woodlands School P.T.A.

Flower Shows and special events held at Descanso Gardens, 1971-1973:

Annual Rose Pruning and Planting Program

Art Exhibits (7)

Art Festival

Bonsai Show

California Association of Nurserymen

Camellia Festival

Christmas Decorations Exhibit

Chrysanthemum Show

Chrysanthemum Tea - Members Only

Concerts (5)

Daffodil Show

Descanso Gardens Guild Annual Meeting and Tea

Early Camellia Show

Red Carpet Preview

San Fernando Audubon Society Meeting

Theodore Payne Lectures (6)

SOUTH COAST BOTANIC GARDEN

Landscaping at South Coast poses a special challenge because the garden is sited on a former trash dump. Maintenance, cost, beauty, selection, and horticultural potential are landscaping factors which at South Coast are difficult and sometimes impossible to reconcile. The challenge is to make the best accommodation among them that conditions permit, not only in the interest of the community which wishes to enjoy the beauty of colorful plants, but also because South Coast Botanic Garden is a unique example of the reclamation of a landfill operation and the object of continued interest by environmentalists and other botanic gardens all over the world.

The conversion of many lawn areas to ground covers and maximum use of mulching has brought a natural beauty to the garden while reducing maintenance costs. Approximately 22 acres of previously undeveloped area on the west side is now being seeded routinely with annual rye grass to safeguard against erosion, at the same time making an otherwise bleak area more attractive until final landscaping can be completed.

Continued problems with the lake and stream complex due to seepage resulted in settling of the stream bed and lowering of the lake water level. Work to raise the stream bed to establish a new channel has been completed and further lake repair work is currently underway.

A project of great benefit to visitors as well as the staff was the asphalt paving of the main tram roads which greatly minimized a serious dust problem.

Attendance

1971-72	1972-73
54,631	77,811

Attendance at South Coast increased 64.8 percent over the previous biennial period. This dramatic increase resulted from several factors, primarily grounds development bringing added botanical and horticultural interest, an increase in the number of tram tours and public information services, and expanded publicity in all segments of the communications media. Also, as information about this garden and its landfill origin has spread, it has attracted the attention of public officials from other cities, many of whom are making personal visits to learn at first hand how problems related to escaping methane gases, subsidence and high soil temperatures are handled.

Weather

South Coast Botanic Garden weather charts are made available to the Los Angeles County Flood Control District Hydraulic Division and the garden issues a monthly chart for Palos Verdes Peninsula.

Data for the weather season, October 1 to September 30:

	1971-72	1972-73
Lowest Temperature	31° - Jan. 4, 1972	25° - Dec. 9, 1972
Highest Temperature	100° - July 28,1972	103° - June 20, 1973
Total Days of Rainfall	17	41
Heaviest Monthly Rainfall	Dec. - 6.71 inches	Feb., 1973 - 5.35 inches
Yearly Rainfall	7.23 inches	19.83 inches

During 1971-1973, South Coast Botanic Garden served as a meeting place for the following societies, garden clubs, and civic organizations:

Costa Verde District Garden Club
Cub Scouts
Fuchsia Society
Gardeneers Garden Club
Girl Scouts
Green Thumbs Garden Club
Los Angeles City Department of Parks and Recreation
Neptune Garden Club
Palos Verdes Women's Club
San Pedro Adult School
Silver Spur Garden Club
South Bay Bromeliad Associates
South Bay Garden Club
South Bay Herb Society
South Coast Cactus & Succulent Society
Volunteer Bureau, Torrance
Welcome Wagon of Palos Verdes
Wilmington Women's Club

Flower shows and special events presented at South Coast Botanic Garden:

Annual Meeting South Coast Botanic Garden Foundation
Birdwalk Training Program - Audubon Society
Bromeliad Associates Meeting
Bromeliad Show
Costa Verde District Flower Show
Exhibit of Insectivorous Plants
Fiesta De Flores
Flower Show Judges School
Flower Show - Silver Spur Garden Club
Holidays in the Garden Christmas Exhibit
Lectures and Walks (9)
South Bay Cactus & Succulent Society Meeting
South Bay Herb Society Meeting
South Coast Cactus & Succulent Society Show
The Gardeneers Garden Club Flower Show
Youth Ecology Fair

RESEARCH

Department research projects are mainly directed toward the study and solution of environmental problems within the community.

A new project in this biennium is concerned with municipal wastewater and sludge management. Its ultimate goal is to set criteria for the use of effluent waters to irrigate horticultural plants as an alternative to dumping such waters into the ocean. The project involves the study of the relative toxicity of various metals found in effluent waters and the corollary study of the resistance of various ornamental plants to the toxic materials. Seventeen acres of land, known as San Jose Creek Test Station, at the junction of the Pomona and San Gabriel River Freeways, have been leased from the Sanitation District for future testing.

Air Pollution

Studies in this continuing research project show that a pollutant of the photochemical oxidant type may react with plant tissue when it enters the leaf and cause leaf injury yet be destroyed itself. A pollutant may also react with chemical substances on or in the leaves and be destroyed but yet cause no plant injury. In either instance, the plant is serving to cleanse the air of pollutants. Numerous studies of air cleansing by plants have been conducted to determine the most efficient species and to ascertain the conditions most conducive to air cleansing by plants.

The inheritance pattern of air pollution tolerance in plants is of considerable importance to the plant breeder who desires to develop tolerant varieties. Studies have shown that tolerance to ozone, peroxyacetylnitrate (PAN), and ambient photochemical oxidants in petunias is due to a small number of genes which act primarily in an additive manner but show some degree of dominance. The magnitude of the heritability estimate indicates that the breeder can readily select for tolerance in this species.

Fire Retardant Plant Project

Laboratory studies of plant flammability are continuing. Data show that moisture content and leaf thickness are important factors governing fuel ignition. The moisture retention capacity of a plant and not the moisture content appears to control fuel surface temperature during heating.

Pathology

Practical field control of Armillaria mellea (oak root rot fungus) with cycloheximide is an important consideration. Injection of adult oak trees was made at Huntington Library for the purpose of delimiting the ranges of concentration and application rate of cycloheximide. Concentrations at 100 ppm to 400 ppm of cycloheximide produced no visible injury to the tree. Leaf necrosis appeared at higher rates of injection, however, and new leaves and shoots sprouted in abundance within three weeks after application.

Plant Breeding

A selection program is underway with petunias to develop varieties more tolerant of photochemical oxidants.

A number of controlled pollinations were made among Cictus selections that show promise as low fuel types for use on green belts around hillside homes and as low maintenance cover for woodland sites. The goal is to develop a prostrate type with a good root system, high drought tolerance, resistance to insects and disease, and with desirable ornamental properties.

Callistemon interspecific crosses were made to provide a measure of species relationships as evidenced by their ability to cross and segregate for various traits. An understanding of the inheritance of various traits will in turn provide a better understanding of the possible parentage of a number of putative hybrids presently in the nursery trade.

Attempted crosses between yellow-and purple-flowered tabebuias is continuing in an effort to obtain trees with the desired features of both groups.

Plant Virus Program

The study of tobacco mosaic virus (TMV) on various ornamental plants has revealed a general acceptance of species of plants to TMV infection. Resistance among different plant species to virus infection can be correlated with virus replicating capacity. Monocotyledonous plants and ferns are shown to be capable of infection by this virus. Physiological studies on virus resistance by means of plant hormone application and light and dark treatment indicates a direct correlation

of virus resistance with metabolic mechanisms of the plant. Susceptible plants react differently to these treatments because of lack of resistant factors.

Herbarium

During the biennium, 1,326 individual collections totaling about 5,000 botanical specimens were acquired by the Herbarium. Of the collections, a total of 693 specimens were obtained from the Arnold Arboretum, Barnes Arboretum, Fairchild Tropical Garden, and the U.S. National Arboretum, through the specimen exchange program. Over 1,600 specimens have been mounted and incorporated into the Herbarium which presently contains over 10,000 mounted specimens. Over 2,000 exchange sheets were distributed and over 500 specimens were sent for referral to herbaria overseas.

Special research has been devoted to the following genera: Acacia, Eucalyptus, Grevillea, Melaleuca, and Kunzea. These studies were undertaken in the interest of elucidating the proper scientific classification of the species within these groups and the species in our living Arboretum collection.

The Herbarium has been active in a student work program and in a program conducted through Las Voluntarias involving volunteers assisting in the Herbarium, learning herbarium techniques, and how to identify and preserve plants.

Plant Records

The Plant Records Unit is responsible for the maintenance of identified and labeled plants, plant data, the seed collection and exchange program and the dissemination and collection of weather data.

During the biennium, 1,320 accessions were posted from botanical gardens, nurseries and individuals. Some of the outstanding additions to our introduction program came from the following sources:

Camellia japonica hybrids	-	U.S. Department of Agriculture
Impatiens hybrids	-	U.S. Department of Agriculture (collected in the wilds of New Guinea)
Hoya species	-	U.S. Department of Agriculture (collected in the wilds of New Guinea)
Gladiolus species	-	J. W. Loubser - South Africa
Palm species	-	California Jungle Gardens (large collection)
Various genera	-	Aritaki Arboretum, Japan
Various genera	-	Canberra Botanic Gardens, Australia
Various genera	-	Christchurch Botanic Gardens, New Zealand
Various genera	-	Hong Kong Herbarium, Hong Kong
Various genera	-	Hortus Botanicus, Bornova-Izmir, Turkey
Various genera	-	Marimurtra Botanic Gardens, Spain
Various genera	-	Monrovia Nursery and Select Nursery
Various genera	-	United States National Arboretum, Washington, D.C.

	1971-72	1972-73
Accessions	404	916
Seed Planted	403	554
Plants Moved to Permanent Field Locations	1,150	484
Identification Labels Made	4,446	4,126

Seed and Plant Exchange

In accordance with Arboretum policy, seed and plant materials were distributed on an exchange basis to various arboreta, botanic gardens, nurseries and individuals in the United States and around the world. Members of the California Arboretum Foundation, Inc., were given an allotted number of seed envelopes of easily germinated but highly ornamental plants that are not generally available to the public. Over 6,500 envelopes of diverse kinds of seed were distributed. Some of the foreign botanic gardens with whom we exchanged seed and plant material are: Hong Kong Herbarium; Christchurch Botanic Gardens, New Zealand; University of Ghana Botanic Gardens, Ghana; Salisbury Botanic Gardens, Rhodesia; Kyoto Takeda Herbal Garden, Japan; Taiwan Forest Research Institute, China; Universidad Austral, Valdivia, Chile; Jardin Botanique, Nantes, France; University of Pretoria Botanic Gardens, Pretoria, South Africa; etc. A particularly outstanding collection of twenty-one accessions of bougainvillea hybrids were sent to us by the United States Department of Agricultural Experiment Station, Glenn Dale, Maryland. Two other greatly climatically desired collections of seed were sent to us by Christchurch Botanic Gardens, New Zealand and from the Universidad Austral, Valdivia, Chile.

AFFILIATED SUPPORTING FOUNDATIONS

Three affiliated non-profit supporting foundations made possible the implementation of numerous public programs that benefit and supplement the County operation and maintenance of this Department.

California Arboretum Foundation

The California Arboretum Foundation is the oldest non-profit organization affiliated with this Department. It is governed by a Board of Trustees, each member serving a three year term. Its basic aim is to support the horticultural goals of the Los Angeles State and County Arboretum. Membership in the Foundation has increased from 770 in June, 1971 to 1,677 as of June 30, 1973. During the past two-year period, the Foundation has sponsored a number of events related to the commemoration of the Department's 25th anniversary, additionally, it has sponsored three Sunday garden walks; five Sunday afternoon lectures; and two 18-hour orientation courses for volunteers (Las Voluntarias) which resulted in a contribution of 18,750 hours of volunteer time in 1971-72 and 38,551 hours in 1972-73.

The Foundation sponsored three fund-raising events during this biennial period: two Baldwin Bonanzas and the Queen Anne Frolic. In addition to the special events, the Foundation has served as host for luncheons, open houses, special holiday observances, and annual meetings. It has cosponsored 40 flower shows, six flower-arranging classes and 26 mini-courses.

The Foundation operates a Gift Shop on the Arboretum grounds where sales of plants were begun in July, 1971. Souvenir items were replaced with Arboretum plant introductions, horticultural and botanical books, and craft items designed and made by volunteers. The Foundation administers funds for the State Rehabilitation and W.I.N. Programs and the Foundatior sponsored or cosponsored classes.

The Foundation publishes "LASCA Leaves," a Department publication distributed quarterly to Arboretum members and other botanic gardens, universities, and horticultural institutions.

Las Voluntarias

Members of Las Voluntarias, the volunteer work organization of the California Arboretum Foundation, provide many valuable services for the Arboretum.

Areas receiving their assistance during the biennium were:

The Garden for All Seasons - Planted and maintained exclusively by volunteers, this garden demonstrates to the public that with the proper selection and cultivation, vegetables and blooming flowers can be grown the year round in Southern California.

Sunset Demonstration Home Gardens and Peacock Pavilion - Fresh flower arrangements for public information and beauty.

Research - Assist in staff research and perform darkroom and photographic services.

Arboretum Foundation Gift Shop - Provide sales assistance.

Information Center - Staff the information window during peak hours. Serve as field leaders in the school field trip program.

Historical Buildings - Staff the Santa Anita Depot and provide special tours to visitors on Tuesday, Wednesday and Sunday mornings and Wednesday and Sunday afternoons. Assist in building maintenance by cleaning, polishing and laundering items as needed and by providing fresh flower arrangements in rooms viewed by the public. Take part in historical research on the Baldwin Family, California architecture and the Rancho period of California history including cataloguing of slides, post cards, costume and photographic collections.

Library and Herbarium - Assist in cataloguing, filing and attending patrons of the library. In the herbarium, assist in labeling and mounting collected specimens.

Youth Education Program - Teach classes on weekday afternoons and during the summer. Maintain, water, and clean up the greenhouse and nursery areas and assist in registering adults and youths for the Arboretum Education Programs. Assist in preparing and mailing all information materials to schools in connection with the Arbor Day Program.

DONATIONS AND SALES

JULY 1, 1971 THROUGH JUNE 30, 1973

	1971-72	1972-73
Monetary Donations	$43,829	$51,154
Non-Monetary Donations	25,133	16,342
Grounds Donations	9,479	15,085
Plant Sales	588	1,728
GRAND TOTAL	$79,029	$84,309

Some of the principal donations contributing to the preceding totals were as follows:

Baldwin Bonanza and Donations for New Gatehouse	$20,502
Arboretum Development Projects	10,453
Queen Anne Frolic for Meadowbrook Stream	6,588
Meyberg Waterfall	6,000
Publication - History of the Arboretum	4,300
Two Trailers for Clark Tractor	3,606
Demonstration Home Garden	3,328
Plant Purchases	3,149
Garden for All Seasons	2,000

Descanso Gardens Guild

The Guild is composed of nearly 700 civic-minded citizens who assist in the development of Descanso Gardens. It is governed by a Board of Trustees who hold office on a rotating basis.

During the biennium, the Guild contributed over $52,000 in funds to various special garden development projects which included:

1. Development of a Garden Kitchen in the Hospitality House to be used as a display and work center for the Guild and other community service groups;
2. A continued program for physically, emotionally, and mentally handicapped children;
3. Sponsorship or cosponsorship of flower shows, concerts and special events annually;

4. Providing funds for the purchase of plants and bulbs for garden color, for furnishings for the Hospitality House and for refurbishing the Bird Observation Station.

In addition to monetary donations, the Guild, through its volunteers, has devoted approximately 19,300 hours to public services by staffing flower shows, education classes, flower arranging classes, special events and by serving as guides in the Hospitality House. Over 3,600 additional hours of docent time has been spent conducting educational tours and field trips during the school year.

South Coast Botanic Garden Foundation

South Coast Botanic Garden Foundation was originally incorporated in 1961. There were 221 members as of June 30, 1973.

The Foundation sponsors many events; among them in this biennium, the Ecology Fair, which attracted more visitors than any other single event at the Garden and the annual Fiesta de Flores which suffered an attendance loss in 1973 due to a major fire in the area.

The Foundation continues to cosponsor and assist in adult and youth education classes, school field tours, as well as providing assistance in conducting public garden tours and in staffing a variety of clerical and other support functions.

FINANCIAL REPORT

1971-72

Salaries and Wages	$1,386,469
Services and Supplies	$ 134,081
Capital Outlay Equipment	$ 14,643
TOTAL DEPARTMENT	$1,535,193

1972-73

Salaries and Wages	$1,477,044
Services and Supplies	$ 177,498
Capital Outlay Equipment	$ 21,061
TOTAL DEPARTMENT	$1,675,603